

I Claim:

1. A multiple-fold automatic umbrella comprising:

a central shaft consisting of a plurality of tubes telescopically engageable with one another, having an upper notch formed on a top portion of the shaft and a lower runner slidably held on the shaft;

a rib assembly pivotally connected between the upper notch and the lower runner;

an opening spring retained in the shaft for opening the umbrella;

a plurality of closing springs retained on the rib assembly for closing the umbrella; and

a control means including a push button slidably held in a grip, an opening controller including an upper latch formed in the grip and operatively depressed by said push button for extending said tubes of said shaft and said rib assembly for opening the umbrella, and a closing controller including a lower latch formed in the grip and operatively depressed by said push button for unlocking a locking head for closing the umbrella from an opened umbrella, and said locking head secured with a multiple-fold rope including a first rope section from an inner rope end, secured to said locking head locked in a lower portion of said shaft when closing the umbrella, to a first guiding roller pivotally mounted in the top portion of the shaft adjacent to the upper notch; a second rope section from the first guiding roller to a second guiding roller pivotally mounted

on the lower runner; a third rope section from the second guiding roller to a third guiding roller pivotally mounted in the top portion of the shaft;

a fourth rope section from the third guiding roller to a fourth guiding roller pivotally mounted on the lower runner; and a fifth rope section from the fourth guiding roller to an outer rope end secured in the upper notch; said first and third guiding rollers pivotally mounted in an upper roller holder formed in the top portion of the shaft; and said second and fourth guiding rollers pivotally mounted in a lower roller holder formed in the lower runner.

2. A multiple-fold automatic umbrella according to Claim 1, wherein said upper roller holder includes: a pair of lugs diametrically or oppositely formed on an upper portion of the upper roller holder to be engaged with a pair of notches diametrically recessed in a top portion of the upper tube; a first roller cavity recessed in the upper roller holder for pivotally securing the first guiding roller therein; and a third roller cavity recessed in the upper roller holder for pivotally securing the third guiding roller therein; having at least a rope hole formed through the roller holder for passing the rope therethrough.
3. A multiple-fold automatic umbrella according to Claim 1, wherein said first and third guiding rollers are coaxially pivotally secured on a pivot having opposite pivot end portions embedded and fixed

in a pair of pivot holes formed in the upper roller holder.

4. A multiple-fold automatic umbrella according to Claim 1, wherein said lower roller holder includes: a holding block having a pair of lugs oppositely formed on the holding block to be respectively engaged with two lug holes respectively formed in a pair of side plates juxtapositionally formed on the lower runner; a second roller cavity recessed in the holding block for pivotally securing the second guiding roller in the second roller cavity; a fourth roller cavity recessed in the holding block for pivotally securing the fourth guiding roller in the fourth roller cavity; a pivot secured in the holding block for pivotally mounting the second and fourth guiding rollers on the pivot, with the holding block snugly rested on a base formed in the lower runner between the two side plates; an extending arm protruding downwardly from the holding block to be engaged with a recess formed in the lower runner under the base having a groove arcuately recessed in the extending arm to be engaged with a fastening wire provided for fastening a ferrule of the lower runner for fastening the extending arm and the lower roller holder stably on the lower runner for well protecting the second and fourth guiding rollers in the lower holder.
5. A multiple-fold automatic umbrella comprising:
a central shaft consisting of a plurality of tubes telescopically engageable with one another, having an upper notch formed on a top portion of the shaft and a lower runner slidably held on the

shaft;

a rib assembly pivotally connected between the upper notch and the lower runner;

an opening spring retained in the shaft for opening the umbrella;

a plurality of closing springs retained on the rib assembly for closing the umbrella; and

a control means including a push button slidably held in a grip, an opening controller including an upper latch formed in the grip and operatively depressed by said push button for extending said tubes of said shaft and said rib assembly for opening the umbrella, and a closing controller including a lower latch formed in the grip and operatively depressed by said push button for unlocking a locking head for closing the umbrella from an opened umbrella, and said locking head secured with a multiple-fold rope including a first rope section from an inner rope end, secured to said locking head locked in a lower portion of said shaft when closing the umbrella, to a first guiding roller pivotally mounted in the top portion of the shaft adjacent to the upper notch; a second rope section from the first guiding roller to a second guiding roller pivotally mounted on the lower runner;

a third rope section from the second guiding roller to a third and a fourth guiding rollers respectively pivotally mounted in the top portion of the shaft; a fourth rope section from the third and fourth guiding rollers to an outer rope end secured on the lower

runner opposite to the second guiding roller; said first, third and fourth guiding rollers pivotally mounted in an upper roller holder formed in the top portion of the shaft; and said second guiding roller pivotally mounted in a lower roller holder formed in the lower runner.

6. A multiple-fold automatic umbrella according to Claim 5, wherein said upper roller holder includes: a pair of lugs diametrically formed on an upper portion of the upper roller holder to be engaged with a pair of notches diametrically recessed in a top portion of the upper tube; a first roller cavity recessed in the upper roller holder for pivotally securing the first guiding roller therein; a third and fourth roller cavities respectively recessed in the upper roller holder for pivotally securing the third and fourth guiding rollers therein; having at least a rope hole formed through the upper roller holder for passing the rope therethrough; and having a rope guide formed on a lower portion of the first roller cavity for guiding the rope from the first guiding roller downwardly towards the second guiding roller.
7. A multiple-fold automatic umbrella according to Claim 6, wherein said two lugs of the upper roller holder are each further formed with a side rope guide groove therein and an upper rope guide groove recessed in the upper portion of the upper roller holder for smoothly guiding the rope across the third and fourth guiding rollers from the third rope section to the fourth rope section

- disposed on opposite sides of the third and fourth guiding rollers.
8. A multiple-fold automatic umbrella according to Claim 5, wherein said lower roller holder includes: a holding block having a pair of lugs oppositely formed on the holding block to be respectively engaged with two lug holes respectively formed in a pair of side plates juxtapositionally formed on the lower runner; a second roller cavity recessed in the holding block for pivotally securing the second guiding roller in the second roller cavity; a pivot secured in the holding block for pivotally mounting the second guiding roller on the pivot, with the holding block snugly rested on a base formed in the lower runner between the two side plates; an extending arm protruding downwardly from the holding block to be engaged with a recess formed in the lower runner under the base having a groove arcuately recessed in the extending arm to be engaged with a fastening wire provided for fastening a ferrule of the lower runner for fastening the extending arm and the lower roller holder stably on the lower runner.
9. A multiple-fold automatic umbrella according to Claim 5, wherein said the rib assembly includes: an intermediate rib pivotally connected between inner ribs and outer ribs of the rib assembly, with the intermediate rib made of plastic materials having a cross section of H shape and including a first elongate groove for slidably holding a spring rib pivotally connected between the inner and outer ribs and juxtapositioned to the intermediate rib by a

ring secured on a middle portion of the intermediate rib, and a second elongate groove opposite to the first elongate groove having a middle extension formed with two recesses therein to be engaged with two protrusions formed on the ring for engaging the ring on the middle extension of the intermediate rib.